

EUROPEAN PATENT OFFICE

Patent Abstracts of Japan

PUBLICATION NUMBER : 62033768
PUBLICATION DATE : 13-02-87

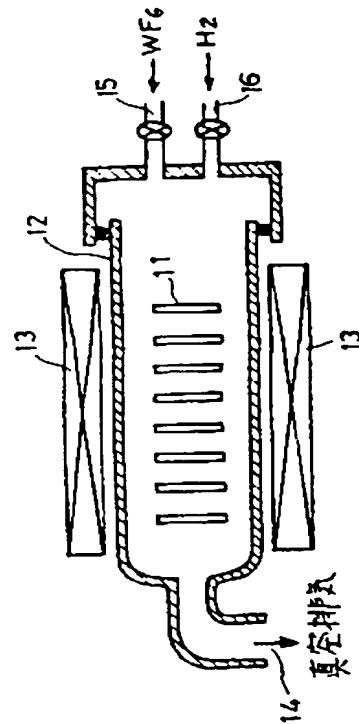
APPLICATION DATE : 02-08-85
APPLICATION NUMBER : 60171436

APPLICANT : FUJITSU LTD;

INVENTOR : SHIOTANI YOSHIMI;

INT.CL. : C23C 16/14

TITLE : SELECTIVE GROWING METHOD FOR
TUNGSTEN FILM



ABSTRACT : PURPOSE: To grow W films having required film thicknesses selectively on semiconductor substrates by admitting a reactive gas consisting of WF_6 and H_2 into a reaction chamber, executing thermal cracking and intermittently stopping the inflow of the reactive gas to increase the vacuum degree in the reaction chamber.

CONSTITUTION: An Si substrate 11 is disposed in the reaction furnace 12 subjected to vacuum evacuation 14 and WF_6 and H_2 are admitted through respective introducing ports 15, 16 into the furnace. The reactive gas admitted into the furnace is heated by a heating element 13 and is thermally cracked. The W formed by the reaction $WF_6 + 3H_2 \rightarrow W + 6HF$ is selectively grown on the above-mentioned Si substrate 11. The admission of the reactive gas in the above-mentioned operation is intermittently stopped and the inside of the furnace 12 is evacuated to a vacuum to once suck and remove the excess HF formed by the above-mentioned reaction. The admission and thermal cracking of the reactive gas are thereafter executed and the same operation is subsequently repeated. The W films having the required film thicknesses are thereby grown selectively on the Si substrates 11.

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